# Teacher's Scoring Guide


## Grade 6
## Mathematics

## Fall 2007



**Indiana Statewide Testing for Educational Progress**

49926-W

# INTRODUCTION

During the fall of 2007, Indiana students in Grades 3 through 10 participated in the administration of *ISTEP+*. The test for *ISTEP+* Fall 2007 consisted of a multiple-choice section and an applied skills section. For the fall testing, the multiple-choice section was machine-scored. The applied skills section, which consisted of open-ended questions, was hand-scored.

The test results for both the multiple-choice and applied skills sections were returned to the schools in late November 2007. Copies of student responses to the open-ended questions were returned to the schools in early December 2007. It is the expectation of the Indiana Department of Education that schools will take this opportunity to invite students and parents to sit down with teachers to discuss the results. To support this endeavor, the Indiana Department of Education has prepared the following *Teacher's Scoring Guide*. The purpose of this guide is to help teachers to:

- understand the methods used to score the *ISTEP+* Fall 2007 applied skills section, and
- discuss and interpret these results with students and parents.

In order to use this guide effectively, you will also need the Student Report and a copy of the student's work.

There are two scoring guides for Grade 6, English/Language Arts and Mathematics. In this Mathematics guide, you will find:

- an introduction,
- a list of the Mathematics Grade 5 Indiana Academic Standards,*
- rubrics (scoring rules) used to score the open-ended questions,
- anchor papers that are actual examples of student work (transcribed in this guide for clarity and ease of reading), and
- descriptions of the ways in which the response meets the rubric criteria for each of the score points.

When you review the contents of the scoring guide, keep in mind that this guide is an overview. If you have questions, write via e-mail (istep@doe.state.in.us) or call the Indiana Department of Education at (317) 232-9050.

* Because *ISTEP+* is administered early in the fall, the Grade 6 test is based on the academic standards through Grade 5.

# INTRODUCTION TO THE MATHEMATICS APPLIED SKILLS SECTION

The applied skills section that students responded to this past fall in Grade 6 allowed the students to demonstrate their understanding of Mathematics in a variety of ways, such as applying formulas, explaining a solution, drawing a picture, or interpreting a table or graph.

## STRUCTURE

The applied skills section for Grade 6 Mathematics was divided into two tests, Test 7 and Test 8. Each test consisted of seven open-ended questions.

## SCORING

Each open-ended question was scored according to its own rubric. A rubric is a description of student performance that clearly articulates the requirements for each of the score points. Scoring rubrics are essential because they ensure that all papers are scored objectively. Each rubric for this administration of the *ISTEP+* Grade 6 Mathematics assessment has a maximum possible score of two or three score points.

**NOTE:** Images of the questions and student work have been reduced to fit the format of this guide. As a result, figures and diagrams in measurement questions will appear smaller in this guide than in the actual test book.

Rubrics are established prior to testing to describe the performance criteria for each score point. The performance criteria determine the number of score points possible for each question. This process ensures that all responses are judged objectively.

1. Students should not be penalized for omitting:
   - degree symbols
   - dollar signs ($) or cent signs (¢)
   - zeros for place holders; for example, either 0.75 or .750 could be used
   - labels for word problems; for example, *miles*

     **NOTE:** Students WILL be penalized for use of incorrect labels.

2. Students should not be penalized for:
   - spelling or grammar errors
   - using abbreviations; for example, *ft* or *feet* would be acceptable

3. Students should be given credit for:
   - entries in the workspace that indicate understanding of a complete process even if the response on the answer line is incorrect (i.e., the student would receive partial credit for questions with rubrics that allow for scoring the work)
   - answers not written on the answer line; for example, an answer could be given in the workspace or in the explanation (however, in some cases, because of the multiple calculations in the workspace, placement of an answer on the answer line is necessary to determine which response the student intended). Students WILL be penalized for incorrect answers written on the answer line even if the correct answer appears in the workspace.

4. Students should be given credit for:
   - bar graphs with bars of any width
   - bar graphs with either horizontal or vertical bars
   - circle graphs with data presented in any order
   - line graphs only if lines connect the points

## CONDITION CODES

If a response is unscorable, it is assigned one of the following condition codes:

A Blank/No response/Refusal
B Illegible
C Written predominantly in a language other than English
D Insufficient response/Copied from text

# MATHEMATICS GRADE 5
# INDIANA ACADEMIC STANDARDS

- **Number Sense**
  Students compute with whole numbers, decimals, and fractions, and understand the relationship among decimals, fractions, and percents. They understand the relative magnitudes of numbers. They understand prime and composite numbers.

- **Computation**
  Students solve problems involving multiplication and division of whole numbers and solve problems involving addition, subtraction, and simple multiplication and division of fractions and decimals.

- **Algebra and Functions**
  Students use variables in simple expressions, compute the value of an expression for specific values of the variable, and plot and interpret the results. They use two-dimensional coordinate grids to represent points and graph lines.

- **Geometry**
  Students identify, describe, and classify the properties of plane and solid geometric shapes and the relationships between them.

- **Measurement**
  Students understand and compute the areas and volumes of simple objects, as well as measuring weight, temperature, time, and money.

- **Data Analysis and Probability**
  Students collect, display, analyze, compare, and interpret data sets. They use the results of probability experiments to predict future events.

- **Problem Solving**
  Students make decisions about how to approach problems and communicate their ideas. Students use strategies, skills, and concepts in finding and communicating solutions to problems. Students determine when a solution is complete and reasonable and move beyond a particular problem by generalizing to other situations.

Problem Solving is identified as a Process Skill in the Indiana Academic Standards. To ensure that the *ISTEP+* questions that assess this Process Skill are grade-appropriate and that the questions use skills that are contained in the standards, these questions are developed by including at least two different indicators from Content Skills in addition to the indicator from the Process Skill. Some of the Content Standards included in the Content Skills are Computation, Geometry, and Algebra. The additional indicators may be from the same or different Content Skills.

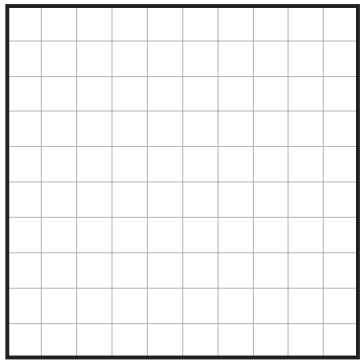
The Content Skills used for each of the Process Skill questions in the Grade 6 applied skills section are shown in the following chart.

**PROCESS SKILL QUESTIONS**

| Question | Process Skill | Content Skills<br>*Item may map to more than one indicator in a standard.* |
|---|---|---|
| **Test 7** | | |
| **5** | Problem Solving | Computation, Measurement |
| **6** | Problem Solving | Computation, Data Analysis and Probability |
| **Test 8** | | |
| **4** | Problem Solving | Computation, Measurement |
| **5** | Problem Solving | Computation, Algebra and Functions |

## **Test 7—Question 1:** Number Sense

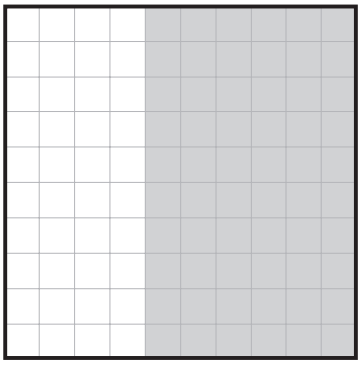
**1** The grid below contains 100 squares. Shade $\frac{3}{5}$ of the grid.



What PERCENT of the grid did you shade?

**Answer** _____ %

**Exemplary Response:**

- 

OR

- Other valid shading

AND

- 60%

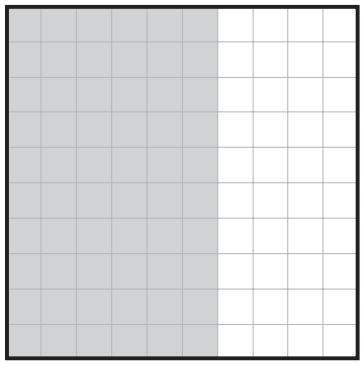
**NOTE:** Award credit for correct percent based on incorrect shading.

**Rubric:**

| | |
|---|---|
| **2 points** | Exemplary response |
| **1 point** | One correct component |
| **0 points** | Other |

## SCORE POINT 2

**1** The grid below contains 100 squares. Shade $\frac{3}{5}$ of the grid.



What PERCENT of the grid did you shade?

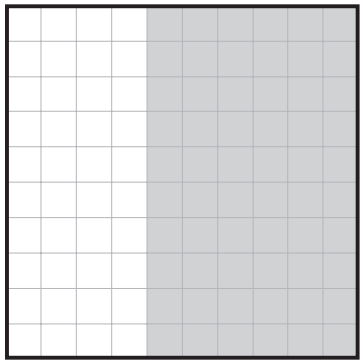
**Answer** 60 %

### Test 7—Question 1 Score Point 2

This response matches the exemplary response contained in the rubric. The student shades the correct fraction of the grid and gives the correct percent that is shaded. The response receives a Score Point 2.

## SCORE POINT 1

**1** The grid below contains 100 squares. Shade $\frac{3}{5}$ of the grid.



What PERCENT of the grid did you shade?

**Answer** 70 %

### Test 7—Question 1 Score Point 1

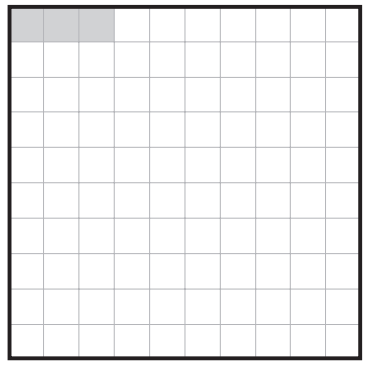
This response shows the correct fraction of the grid shaded. However, an incorrect percent is given. Therefore, this response receives a Score Point 1.

**Test 7—Question 1**
**Score Point 0**

This response shows an incorrect fraction shaded with an incorrect percent given. Therefore, this response receives a Score Point 0.

**SCORE POINT 0**

**1** The grid below contains 100 squares. Shade $\frac{3}{5}$ of the grid.

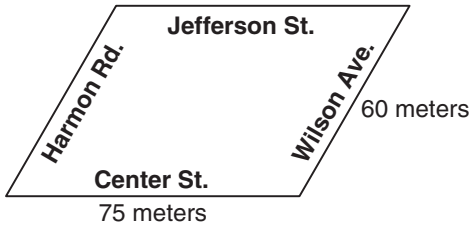


What PERCENT of the grid did you shade?

**Answer** 3/5 %

## Test 7—Question 2: Measurement

**2** The parallelogram shown below is a diagram of a city block.




What is the perimeter, in meters, of the city block?

**Show All Work**

**Answer** _____ meters

**Exemplary Response:**

- 270 meters

Sample Process:

- 60 + 75 + 60 + 75 = 270

OR

- Other valid process

**Rubric:**

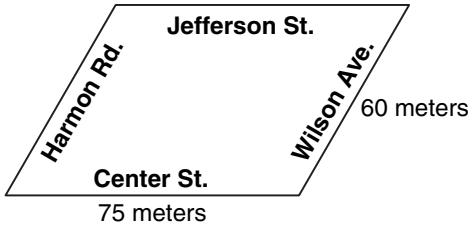
| | |
|---|---|
| **2 points** | Exemplary response |
| **1 point** | Correct complete process; error in computation |
| **0 points** | Other |

**Test 7—Question 2**
**Score Point 2**

This response matches the exemplary response contained in the rubric. The student gives the correct answer of 270 meters. The response receives a Score Point 2.

**SCORE POINT 2**

**2** The parallelogram shown below is a diagram of a city block.




What is the perimeter, in meters, of the city block?

**Show All Work**

$$\begin{array}{r} 60 \\ \times\ 2 \\ \hline 120 \end{array} \qquad \begin{array}{r} {\scriptstyle 1}\,75 \\ \times\ 2 \\ \hline 150 \end{array} \qquad \begin{array}{r} 150 \\ +\,120 \\ \hline 270 \end{array}$$

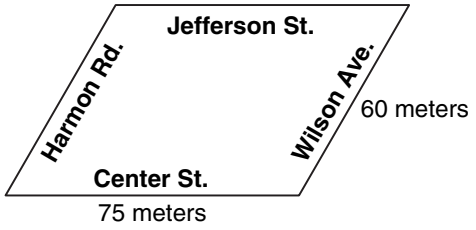
**Answer** 270 meters

**Test 7—Question 2**
**Score Point 1**

This response shows a correct complete process. However, the student makes an error in computation when adding 120 and 150, which results in an incorrect answer. Therefore, this response receives a Score Point 1.

**SCORE POINT 1**

**2** The parallelogram shown below is a diagram of a city block.




What is the perimeter, in meters, of the city block?

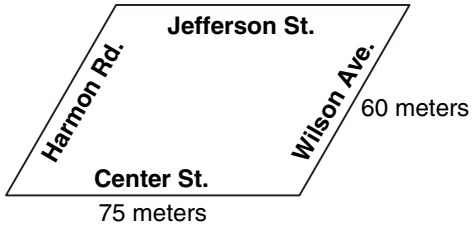
**Show All Work**

$$\begin{array}{r} 60 \\ \times\ 2 \\ \hline 120 \end{array} \qquad \begin{array}{r} {\scriptstyle 1}\,75 \\ \times\ 2 \\ \hline 150 \end{array} \qquad \begin{array}{r} 120 \\ +\,150 \\ \hline 170 \end{array}$$

**Answer** 170 meters

## SCORE POINT 0

**2** The parallelogram shown below is a diagram of a city block.




What is the perimeter, in meters, of the city block?

**Show All Work**

$75 \times 60 = 4{,}500$

**Answer** 4,500 meters

**Test 7—Question 2**
**Score Point 0**

This response shows an incorrect process that leads to an incorrect answer. The student multiplies the given dimensions to find the area instead of the perimeter. Therefore, this response receives a Score Point 0.

## **Test 7—Question 3:** Data Analysis and Probability

**3** Kelly owns a pet store. She sells collars that come in three sizes—Size 1, Size 2, and Size 3.

Kelly is ordering collars for next month and looks at her records of what sizes of collars she sold last month. The data set below shows the sizes she sold last month.

3 1 1 3 2 2 1 3 3

What is the mode of the data set?

**Answer** _____

What does the mode tell about the sizes of collars Kelly should order for next month?

_____

_____

_____

_____

**Exemplary Response:**

- 3

AND

- The mode tells us that Kelly should order more collars in size 3 than the other sizes because more size 3 collars have been sold.

OR

- Other valid explanation

**Rubric:**

| | |
|---|---|
| **2 points** | Exemplary response |
| **1 point** | One correct component |
| **0 points** | Other |

**SCORE POINT 2**

**3** Kelly owns a pet store. She sells collars that come in three sizes—Size 1, Size 2, and Size 3.

Kelly is ordering collars for next month and looks at her records of what sizes of collars she sold last month. The data set below shows the sizes she sold last month.

3 1 1 3 2 2 1 3 3

What is the mode of the data set?

**Answer** Size 3

What does the mode tell about the sizes of collars Kelly should order for next month?

Kelly should order more size three's than one's or two's because three was the size that sold the most.

**Test 7—Question 3**
**Score Point 2**

This response matches the exemplary response contained in the rubric. The student shows a correct mode of 3 and gives a valid explanation. The response receives a Score Point 2.

**Test 7—Question 3**
**Score Point 1**

This response shows the correct mode of 3. However, the student does not give a valid explanation. Therefore, this response receives a Score Point 1.

**SCORE POINT 1**

**3** Kelly owns a pet store. She sells collars that come in three sizes—Size 1, Size 2, and Size 3.

Kelly is ordering collars for next month and looks at her records of what sizes of collars she sold last month. The data set below shows the sizes she sold last month.

3 1 1 3 2 2 1 3 3

What is the mode of the data set?

**Answer** 3

What does the mode tell about the sizes of collars Kelly should order for next month?

She should get sizes 4 next month.

## SCORE POINT 0

**3** Kelly owns a pet store. She sells collars that come in three sizes—Size 1, Size 2, and Size 3.

Kelly is ordering collars for next month and looks at her records of what sizes of collars she sold last month. The data set below shows the sizes she sold last month.

3 1 1 3 2 2 1 3 3

What is the mode of the data set?

**Answer** 19

What does the mode tell about the sizes of collars Kelly should order for next month?

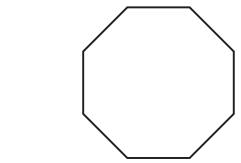
Kelly should order 19 collars for next month.

**Test 7—Question 3**
**Score Point 0**

This response shows an incorrect mode and an invalid explanation. Therefore, this response receives a Score Point 0.

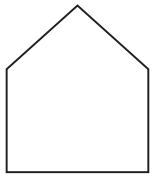
## **Test 7—Question 4:** Geometry

**4** Each of the following objects is a polygon. Write the correct name below each object.

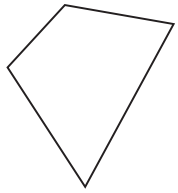


_____

_____

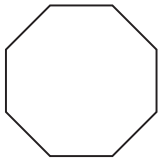


_____

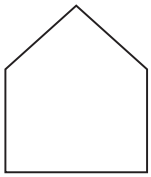


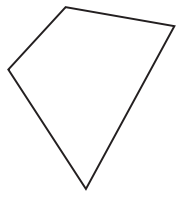
_____

**Exemplary Response:**

- 
octagon


rectangle


pentagon


quadrilateral

OR

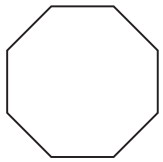
- Other valid response

**Rubric:**

| | |
|---|---|
| **2 points** | Exemplary response |
| **1 point** | Three correct answers |
| **0 points** | Other |

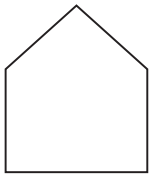
**SCORE POINT 2**

**4** Each of the following objects is a polygon. Write the correct name below each object.

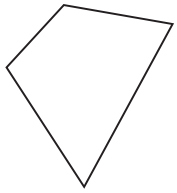


octagon

rectangle



pentagon



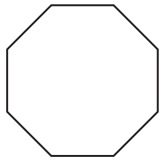
quadrilateral

**Test 7—Question 4**
**Score Point 2**

This response matches the exemplary response contained in the rubric. The student correctly identifies each of the four objects. The response receives a Score Point 2.

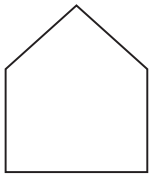
**SCORE POINT 1**

**4** Each of the following objects is a polygon. Write the correct name below each object.

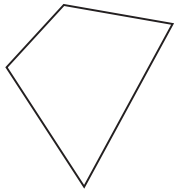


octagon

rectangle



pentigon



**Test 7—Question 4**
**Score Point 1**

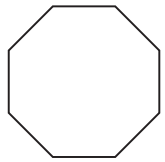
This response correctly identifies 3 of the objects. However, the student does not indicate the name of the last object. Therefore, this response receives a Score Point 1.

**Test 7—Question 4**
**Score Point 0**

This response correctly identifies only one object. Therefore, this response receives a Score Point 0.

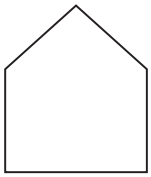
**SCORE POINT 0**

**4** Each of the following objects is a polygon. Write the correct name below each object.

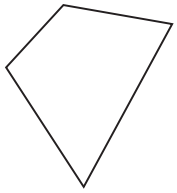


Pentogon

rectangle



hexigon



trapazoid

## **Test 7—Question 5:** Problem Solving

**5** Look at the rectangle below.


Jeff claims that if he doubles the length and width of the rectangle, the area of the new rectangle will be doubled.

What are the areas, in square inches, of the original rectangle and the new rectangle?

Area of rectangle $= lw$
$=$ length $\times$ width

**Show All Work**

**Original rectangle** _____ square inches

**New rectangle** _____ square inches

On the lines below, use the areas of the rectangles to explain how to determine if Jeff's claim is correct.

_____

_____

_____

**Exemplary Response:**

- 32 square inches and 128 square inches

AND

- Correct complete process

Sample Process:

- $8 \times 4 = 32$

  $16 \times 8 = 128$

OR

- Other valid process

AND

- The original area would be $8 \times 4 = 32$ square inches. If you double the length and width, the area would be $16 \times 8 = 128$ square inches. Then multiply 32 by 2 and see if that is the same as 128.

OR

- Other valid explanation

**NOTE:** Award credit for a correct explanation based on an error in computation.

**Rubric:**

| | |
|---|---|
| **3 points** | Exemplary response |
| **2 points** | Two correct components |
| **1 point** | One correct component |
| **0 points** | Other |

## SCORE POINT 3

**5** Look at the rectangle below.


Jeff claims that if he doubles the length and width of the rectangle, the area of the new rectangle will be doubled.

What are the areas, in square inches, of the original rectangle and the new rectangle?

Area of rectangle $= lw$
$=$ length $\times$ width

**Show All Work**

$$\begin{array}{r} 8 \\ \times\ 4 \\ \hline 32 \end{array} \qquad \begin{array}{r} {\scriptstyle 4} \\ 8 \times 2 = 16 \\ 4 \times 2 = \times\ 8 \\ \hline 128 \end{array}$$

**Original rectangle** 32 square inches

**New rectangle** 128 square inches

On the lines below, use the areas of the rectangles to explain how to determine if Jeff's claim is correct.

If you wanted to find out if Jeff was correct you would take 32 × 2 and see if it equaled 128in$^2$.

### Test 7—Question 5
### Score Point 3

This response matches the exemplary response contained in the rubric. The student shows a correct complete process, the correct areas of 32 square inches and 128 square inches, and correctly explains how to determine if the claim is correct. The response receives a Score Point 3.

**Test 7—Question 5**
**Score Point 2**

This response shows a correct complete process with a correct explanation. However, the student gives an incorrect area for the original rectangle. Therefore, the response receives a Score Point 2.

## SCORE POINT 2

**5** Look at the rectangle below.


Jeff claims that if he doubles the length and width of the rectangle, the area of the new rectangle will be doubled.

What are the areas, in square inches, of the original rectangle and the new rectangle?

Area of rectangle $= lw$
$=$ length $\times$ width

**Show All Work**

$$\begin{array}{r} 8 \\ \times\ 4 \\ \hline 32 \\ \downarrow \\ 64 \end{array} \qquad l \times w \quad 8 \times 4$$

$$\text{New} \quad l \times w \quad 16 \times 8 \qquad \begin{array}{r} {\scriptstyle 4}\,16 \\ \times\ 8 \\ \hline 128 \end{array}$$

**Original rectangle** 64 square inches

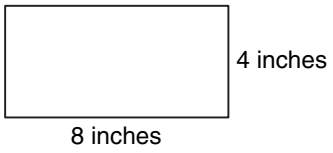
**New rectangle** 128 square inches

On the lines below, use the areas of the rectangles to explain how to determine if Jeff's claim is correct.

If Jeffs claim is correct then 8 × 4 × 32 double 32-64 the new rectangle is 16 × 8 = 128. Jeff claim is incorrect 64 does not equal 128.

## SCORE POINT 1

**5** Look at the rectangle below.




Jeff claims that if he doubles the length and width of the rectangle, the area of the new rectangle will be doubled.

What are the areas, in square inches, of the original rectangle and the new rectangle?

Area of rectangle $= lw$
$=$ length $\times$ width

**Show All Work**

$$\begin{array}{r} 8 \\ \times\ 4 \\ \hline 32 \end{array} \qquad \begin{array}{r} {\scriptstyle 4}\,16 \\ \times\ 8 \\ \hline 118 \end{array}$$

**Original rectangle** 32 square inches

**New rectangle** 118 square inches

On the lines below, use the areas of the rectangles to explain how to determine if Jeff's claim is correct.

It is correct because I did 16 × 8 and it equled 188.

### Test 7—Question 5
### Score Point 1

This response shows a correct complete process. However, the student makes an error in computation when multiplying 16 and 8, which results in an incorrect area for the new rectangle. The student also gives an invalid explanation for determining if Jeff's claim is correct. Therefore, the response receives a Score Point 1.

**Test 7—Question 5**
**Score Point 0**

This response shows an incorrect process that leads to incorrect areas for the two rectangles and an incorrect explanation. Therefore, this response receives a Score Point 0.

## SCORE POINT 0

**5** Look at the rectangle below.


Jeff claims that if he doubles the length and width of the rectangle, the area of the new rectangle will be doubled.

What are the areas, in square inches, of the original rectangle and the new rectangle?

Area of rectangle $= lw$
$=$ length $\times$ width

**Show All Work**

| | | |
|---|---|---|
| 3 3<br>2 2<br>256<br>× 64<br>1024<br>+ 15360<br>16384 | 3<br>2<br>16<br>× 64<br>164<br>+ 960<br>1024 | 3<br>16<br>× 16<br>196<br>+ 160<br>256 |

**Original rectangle** 1,024 square inches

**New rectangle** 16,384 square inches

On the lines below, use the areas of the rectangles to explain how to determine if Jeff's claim is correct.

Yes: cause if you double it. It becomes a bigger number.

## **Test 7—Question 6:** Problem Solving

**6** Anne's spelling scores for the first 4 months of the school year are shown in the table below.

**Anne's Scores**

| **Month** | Sep | Oct | Nov | Dec | Jan | Feb |
|---|---|---|---|---|---|---|
| **Score** | 81 | 98 | 95 | 98 | | |

On the lines below, write two scores that Anne could get in January and February to make her mean score 93 for all six months.

**Show All Work**

**Answer** _____ and _____

**Exemplary Response:**

- Accept any two values that add to 186

AND

- Correct complete process

Sample Process:

- $81 + 98 + 95 + 98 = 372$

  $93 \times 6 = 558$

  $558 - 372 = 186$

  $186 \div 2 = 93$

OR

- Other valid process

**Rubric:**

| | |
|---|---|
| **2 points** | Exemplary response |
| **1 point** | Correct answer only<br>OR<br>Correct complete process; error in computation |
| **0 points** | Other |

**Test 7—Question 6**
**Score Point 2**

This response matches the exemplary response contained in the rubric. The student shows a correct complete process and gives two values that total 186. The response receives a Score Point 2.

## SCORE POINT 2

**6** Anne's spelling scores for the first 4 months of the school year are shown in the table below.

**Anne's Scores**

| **Month** | Sep | Oct | Nov | Dec | Jan | Feb |
|---|---|---|---|---|---|---|
| **Score** | 81 | 98 | 95 | 98 | | |

On the lines below, write two scores that Anne could get in January and February to make her mean score 93 for all six months.

**Show All Work**

$$\begin{array}{r} {\scriptstyle 2}\,81 \\ +\,98 \\ +\,95 \\ +\,98 \\ \hline 372 \end{array} \qquad 93 \times 6 = 558 \qquad 558 - 372 = 186 \qquad 2\overline{)186} \quad 93$$

**Answer** 93 and 93

## SCORE POINT 1

**6** Anne's spelling scores for the first 4 months of the school year are shown in the table below.

**Anne's Scores**

| Month | Sep | Oct | Nov | Dec | Jan | Feb |
|---|---|---|---|---|---|---|
| Score | 81 | 98 | 95 | 98 | 93 | 93 |

On the lines below, write two scores that Anne could get in January and February to make her mean score 93 for all six months.

**Show All Work**

**Answer** 93 and 93

**Test 7—Question 6**
**Score Point 1**

This response shows two values that total 186. However, the student does not show a correct complete process. Therefore, this response receives a Score Point 1.

**Test 7—Question 6**
**Score Point 0**

This response shows an incorrect process that leads to an incorrect answer. Therefore, this response receives a Score Point 0.

**SCORE POINT 0**

**6** Anne's spelling scores for the first 4 months of the school year are shown in the table below.

**Anne's Scores**

| **Month** | Sep | Oct | Nov | Dec | Jan | Feb |
|---|---|---|---|---|---|---|
| **Score** | 81 | 98 | 95 | 98 | | |

On the lines below, write two scores that Anne could get in January and February to make her mean score 93 for all six months.

**Show All Work**

83

$$\begin{array}{r} {\scriptstyle 2} \\ 81 \\ 98 \\ 95 \\ \underline{98} \\ 372 \end{array}$$

$$4\overline{)372} \quad 83 \quad 36 \quad 12 \quad 12 \quad 0$$

**Answer** 92 and 93

## **Test 7—Question 7:** Algebra and Functions

**7** Conner took 56 seconds to ride his bike a distance of 392 feet.

At what rate, in feet per second, did Conner ride his bike?

Rate $= d \div t$
$=$ distance $\div$ time

**Show All Work**

**Answer** _____ feet per second

**Exemplary Response:**

- 7 feet per second

Sample Process:

- rate $= \frac{\text{distance}}{\text{time}}$

$= 392 \div 56$

$= 7$ feet per second

OR

- Other valid process

**Rubric:**

| | |
|---|---|
| **2 points** | Exemplary response |
| **1 point** | Correct complete process; error in computation |
| **0 points** | Other |

**Test 7—Question 7**
**Score Point 2**

This response matches the exemplary response contained in the rubric. The student gives a correct answer of 7 feet per second. The response receives a Score Point 2.

**SCORE POINT 2**

**7** Conner took 56 seconds to ride his bike a distance of 392 feet.

At what rate, in feet per second, did Conner ride his bike?

Rate $= d \div t$
$=$ distance $\div$ time

**Show All Work**

$$56\overline{)392}\quad 7,\ 392,\ 0$$

**Answer** 7 feet per second

**Test 7—Question 7**
**Score Point 1**

This response shows a correct complete process. However, the student makes an error in computation when dividing 392 by 56, which results in an incorrect answer. Therefore, this response receives a Score Point 1.

**SCORE POINT 1**

**7** Conner took 56 seconds to ride his bike a distance of 392 feet.

At what rate, in feet per second, did Conner ride his bike?

Rate $= d \div t$
$=$ distance $\div$ time

**Show All Work**

$$56\overline{)392}\quad 7\text{R}40,\ -352,\ 040 \qquad 56 \times 7 = 352$$

**Answer** 7.4 feet per second

**SCORE POINT 0**

**7** Conner took 56 seconds to ride his bike a distance of 392 feet.

At what rate, in feet per second, did Conner ride his bike?

Rate $= d \div t$
$=$ distance $\div$ time

**Show All Work**

$$\begin{array}{r} {\scriptstyle 5\ 1} \\ 392 \\ \times\ 56 \\ \hline 2352 \end{array}$$

**Answer** 2,352 feet per second

**Test 7—Question 7**
**Score Point 0**

This response shows an incorrect process that leads to an incorrect answer. The student multiplies instead of dividing. Therefore, this response receives a Score Point 0.

## **Test 8—Question 1:** Algebra and Functions

**1** The amount of money Hank earns after working $h$ hours is given by the equation below. Let $m$ equal the amount of money Hank earns.

$$m = \$7h$$

How much money would Hank earn after working 35 hours?

**Show All Work**

**Answer** $ _____

**Exemplary Response:**

- $245

Sample Process:

- $m = \$7h$
  $= \$7(35)$
  $= \$245$

OR

- Other valid process

**Rubric:**

| | |
|---|---|
| **2 points** | Exemplary response |
| **1 point** | Correct complete process; error in computation |
| **0 points** | Other |

## SCORE POINT 2

**1** The amount of money Hank earns after working $h$ hours is given by the equation below. Let $m$ equal the amount of money Hank earns.

$$m = \$7h$$

How much money would Hank earn after working 35 hours?

**Show All Work**

$$\begin{array}{r} {\scriptstyle 3} \\ 35 \\ \times\ 7 \\ \hline 245 \end{array}$$

**Answer** $ $245$

**Test 8—Question 1**
**Score Point 2**

This response matches the exemplary response contained in the rubric. The student gives the correct answer of $245. The response receives a Score Point 2.

## SCORE POINT 1

**1** The amount of money Hank earns after working $h$ hours is given by the equation below. Let $m$ equal the amount of money Hank earns.

$$m = \$7h$$

How much money would Hank earn after working 35 hours?

**Show All Work**

$$\begin{array}{r} {\scriptstyle 3} \\ 35 \\ \times\ 7 \\ \hline 24.50 \end{array}$$

**Answer** $ $24.50$

**Test 8—Question 1**
**Score Point 1**

This response shows a correct complete process. However, the student makes an error in computation when multiplying 35 and 7, which results in an incorrect answer. Therefore, this response receives a Score Point 1.

**Test 8—Question 1**
**Score Point 0**

This response shows an incomplete process that leads to an incorrect answer. The student adds instead of multiplies. Therefore, this response receives a Score Point 0.

**SCORE POINT 0**

**1** The amount of money Hank earns after working $h$ hours is given by the equation below. Let $m$ equal the amount of money Hank earns.

$$m = \$7h$$

How much money would Hank earn after working 35 hours?

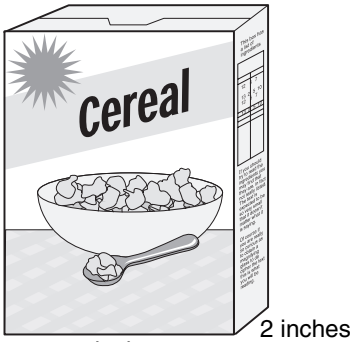
**Show All Work**

$$\begin{array}{r} 17 \\ +35 \\ \hline 42 \\ +35 \\ \hline 77 \end{array}$$

**Answer** $ 77.00

## **Test 8—Question 2:** Measurement

**2** Look at the diagram of a cereal box below.




What is the volume, in cubic inches, of the cereal box?

Volume of rectangular prism = $lwh$
= length × width × height

**Show All Work**

**Answer** _____ cubic inches

**Exemplary Response:**

- 126 cubic inches

Sample Process:

- $V = \text{length} \times \text{width} \times \text{height}$
  $= 9 \times 2 \times 7$
  $= 126$ cubic inches

OR

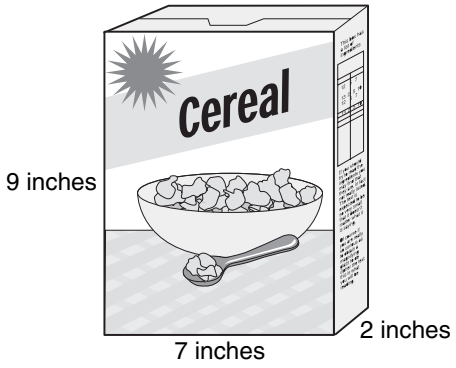
- Other valid process

**Rubric:**

| | |
|---|---|
| **2 points** | Exemplary response |
| **1 point** | Correct complete process; error in computation |
| **0 points** | Other |

## SCORE POINT 2

**2** Look at the diagram of a cereal box below.




What is the volume, in cubic inches, of the cereal box?

Volume of rectangular prism = $lwh$
= length × width × height

**Show All Work**

lenghth = 7
× width = 2
height = 9
126

7 × 2 = 14
14 × 9 = 126

**Answer** 126 cubic inches

**Test 8—Question 2**
**Score Point 2**

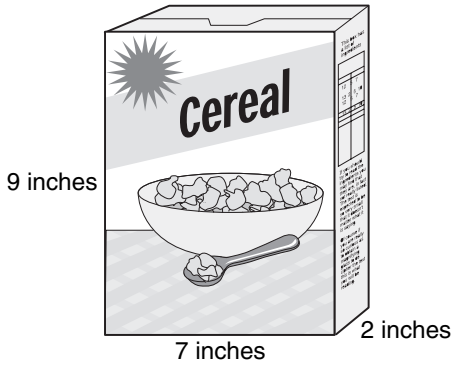
This response matches the exemplary response contained in the rubric. The student gives the correct answer of 126 cubic inches. The response receives a Score Point 2.

**Test 8—Question 2**
**Score Point 1**

This response shows a correct complete process. However, the student makes an error in computation when multiplying 9 and 7, which results in an incorrect answer. Therefore, this response receives a Score Point 1.

**SCORE POINT 1**

**2** Look at the diagram of a cereal box below.




What is the volume, in cubic inches, of the cereal box?

Volume of rectangular prism = $lwh$
= length × width × height

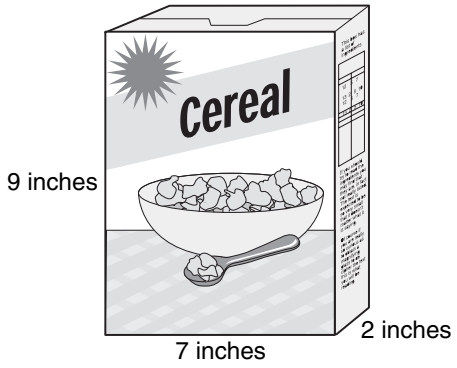
**Show All Work**

$$\begin{array}{r} 9 \\ \times\ 7 \\ \hline 62 \end{array} \qquad \begin{array}{r} 62 \\ \times\ 2 \\ \hline 124 \end{array}$$

**Answer** 124 cubic inches

## SCORE POINT 0

**2** Look at the diagram of a cereal box below.




What is the volume, in cubic inches, of the cereal box?

Volume of rectangular prism = $lwh$
= length × width × height

**Show All Work**

$$3\overline{)18}\quad 6$$
$$-18$$
$$0$$

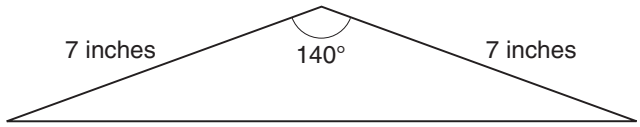
**Answer** 6 cubic inches

**Test 8—Question 2**
**Score Point 0**

This response shows an incomplete process that leads to an incorrect answer. Therefore, this response receives a Score Point 0.

## **Test 8—Question 3:** Geometry

**3** Look at the diagram of the triangle below.




Choose the two words from the following list that BEST describe the triangle.

**acute, obtuse, right, equilateral, isosceles, scalene**

**Answer** _____ and _____

On the lines below, explain why the two words you chose BEST describe the triangle.

_____

_____

_____

**Exemplary Response:**

- isosceles and obtuse

AND

- The triangle is isosceles because two of its sides are congruent. The triangle is obtuse because it has one angle that is larger than 90 degrees.

OR

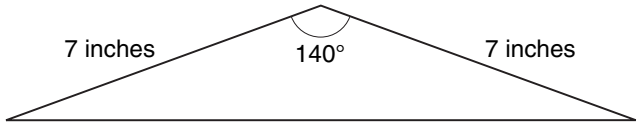
- Other valid explanation

**Rubric:**

| | |
|---|---|
| **2 points** | Exemplary response |
| **1 point** | Correct answers only<br>OR<br>One correct answer with correct explanation |
| **0 points** | Other |

**SCORE POINT 2**

**3** Look at the diagram of the triangle below.




Choose the two words from the following list that BEST describe the triangle.

**acute, obtuse, right, equilateral, isosceles, scalene**

**Answer** obtuce and isosceles

On the lines below, explain why the two words you chose BEST describe the triangle.

One of the angles is wider than 90° and 2 sides are equil but the third one is not.

**Test 8—Question 3**
**Score Point 2**

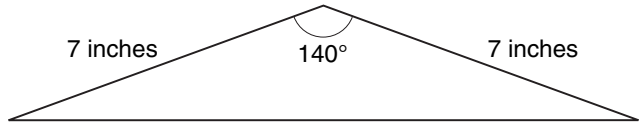
This response matches the exemplary response contained in the rubric. The student correctly identifies the triangle as isosceles and obtuse and gives a valid explanation. The response receives a Score Point 2.

**Test 8—Question 3**
**Score Point 1**

This response correctly identifies the triangle as isosceles and obtuse. However, in the explanation, the student does not give a valid reason for why the triangle is isosceles and obtuse. Therefore, this response receives a Score Point 1.

**SCORE POINT 1**

**3** Look at the diagram of the triangle below.




Choose the two words from the following list that BEST describe the triangle.

**acute, obtuse, right, equilateral, isosceles, scalene**

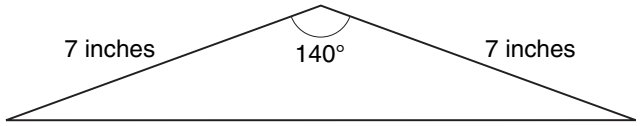
**Answer** obtuse and isosceles

On the lines below, explain why the two words you chose BEST describe the triangle.

Obtuse because it descibes a triangle that would be 140°.
Isosceles because it would describe a triangle that's a little wierd shaped.

**SCORE POINT 0**

**3** Look at the diagram of the triangle below.




Choose the two words from the following list that BEST describe the triangle.

**acute, obtuse, right, equilateral, isosceles, scalene**

**Answer** acute and equilateral

On the lines below, explain why the two words you chose BEST describe the triangle.

It acute because the cornors are relley small.

**Test 8—Question 3**
**Score Point 0**

This response does not identify the triangle correctly and gives an invalid explanation. Therefore, this response receives a Score Point 0.

## **Test 8—Question 4:** Problem Solving

**4** Karen's father ordered outdoor carpeting for a rectangular patio. The carpet he ordered cost $6.75 per square yard and measured $8\frac{1}{4}$ yards wide by $5\frac{3}{4}$ yards long. ESTIMATE the total cost of the carpet, before tax, to the nearest dollar.

Area of rectangle = length × width

**Show All Work**

**Answer** $ _____

How much MORE money will Karen's father need if he has $250?

**Answer** $ _____

**Exemplary Response:**

- Accept answers in range of \$310−\$380, but not the exact answer (\$320.21/\$320.20)

AND

- Correct complete process

Sample Process:

- $8 \times 6 = 48$

  $48 \times 7 = 336$

OR

- Other valid process

AND

- \$60–\$130

**NOTE:** Answer should be equal to first answer minus \$250.

**Rubric:**

| | |
|---|---|
| **3 points** | Exemplary response |
| **2 points** | Two correct components |
| **1 point** | One correct component |
| **0 points** | Other |

**Test 8—Question 4**
**Score Point 3**

This response matches the exemplary response contained in the rubric. The student shows a correct complete process and gives the correct answers of $336 and $86. The response receives a Score Point 3.

**SCORE POINT 3**

**4** Karen's father ordered outdoor carpeting for a rectangular patio. The carpet he ordered cost $6.75 per square yard and measured $8\frac{1}{4}$ yards wide by $5\frac{3}{4}$ yards long. ESTIMATE the total cost of the carpet, before tax, to the nearest dollar.

Area of rectangle = length × width

**Show All Work**

$8\frac{1}{4} \rightarrow 8$
$\times 5\frac{3}{4} \rightarrow \times 6$
$48$

$\overset{5}{48}$
$\times\ 7.00$
$336.00$

**Answer** $ 336.00

How much MORE money will Karen's father need if he has $250?

**Answer** $ 86.00

$\overset{2\ 13}{\not3\not3}6$
$-250$
$86$

## SCORE POINT 2

**4** Karen's father ordered outdoor carpeting for a rectangular patio. The carpet he ordered cost $6.75 per square yard and measured $8\frac{1}{4}$ yards wide by $5\frac{3}{4}$ yards long. ESTIMATE the total cost of the carpet, before tax, to the nearest dollar.

Area of rectangle = length × width

**Show All Work**

$7.00 8 × 6 = 48

8 × 7 = $56.00

6 × 7 = $42.00

8 × 6 = $48.00

$48.00 × 7.00 = 336.00

1
28 + 5 = 33

**Answer** $ 336.00

How much MORE money will Karen's father need if he has $250?

**Answer** $ 186.00

2 1
$ 3 3 6.00
- 250.00
186.00

**Test 8—Question 4**
**Score Point 2**

This response shows a correct complete process. However, the student makes an error in computation when subtracting 250 from 336, which results in an incorrect answer of $186. Therefore, this response receives a Score Point 2.

**Test 8—Question 4**
**Score Point 1**

This response shows only a correct answer of $345. The student does not show a process and has an incorrect answer of $100. Therefore, this response receives a Score Point 1.

**SCORE POINT 1**

**4** Karen's father ordered outdoor carpeting for a rectangular patio. The carpet he ordered cost $6.75 per square yard and measured $8\frac{1}{4}$ yards wide by $5\frac{3}{4}$ yards long. ESTIMATE the total cost of the carpet, before tax, to the nearest dollar.

Area of rectangle = length × width

**Show All Work**

**Answer** $ 345

How much MORE money will Karen's father need if he has $250?

**Answer** $ 100

## SCORE POINT 0

**4** Karen's father ordered outdoor carpeting for a rectangular patio. The carpet he ordered cost $6.75 per square yard and measured $8\frac{1}{4}$ yards wide by $5\frac{3}{4}$ yards long. ESTIMATE the total cost of the carpet, before tax, to the nearest dollar.

Area of rectangle = length × width

**Show All Work**

$6\overline{)\$6.75}$

**Answer** $ 1.125

How much MORE money will Karen's father need if he has $250?

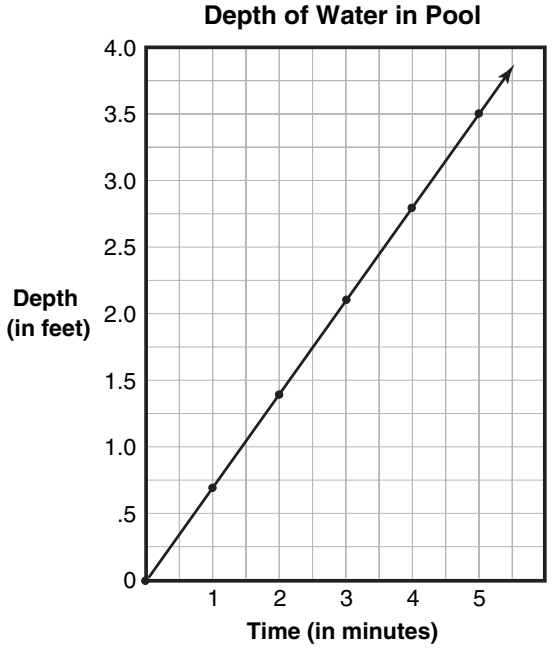
**Answer** $ No

**Test 8—Question 4**
**Score Point 0**

This response shows an incorrect process that leads to two incorrect answers. Therefore, this response receives a Score Point 0.

## **Test 8—Question 5:** Problem Solving

**5** The Smith family is filling their new pool. The graph below shows how the depth of water in the pool changes over time.




ESTIMATE how much the water level rises, in feet, between 1 minute and 4 minutes.

**Estimate** _____ feet

After 3 minutes, the pool is 25% full. On the lines below, explain how you would estimate the total depth of the water when the pool is full.

_____

_____

_____

_____

**Exemplary Response:**

- Accept answers within a range of 2−2.5 feet

AND

- 25% of the pool is about 2 feet. A full pool will be 100%, which is 4 times 25%.
  4 times 2 feet is 8 feet.

OR

- Other valid explanation

**Rubric:**

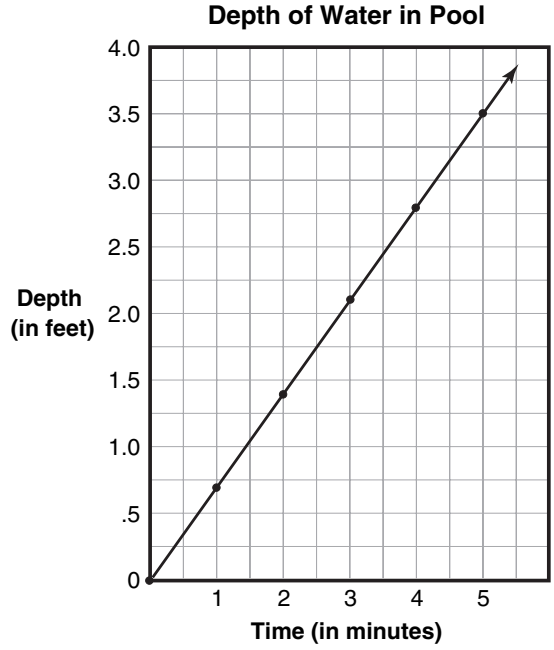
| | |
|---|---|
| **2 points** | Exemplary response |
| **1 point** | One correct component |
| **0 points** | Other |

**Test 8—Question 5**
**Score Point 2**

This response matches the exemplary response contained in the rubric. The student shows the correct answer of 2.25 feet and gives a correct explanation for the total depth of the pool. The response receives a Score Point 2.

**SCORE POINT 2**

**5** The Smith family is filling their new pool. The graph below shows how the depth of water in the pool changes over time.




ESTIMATE how much the water level rises, in feet, between 1 minute and 4 minutes.

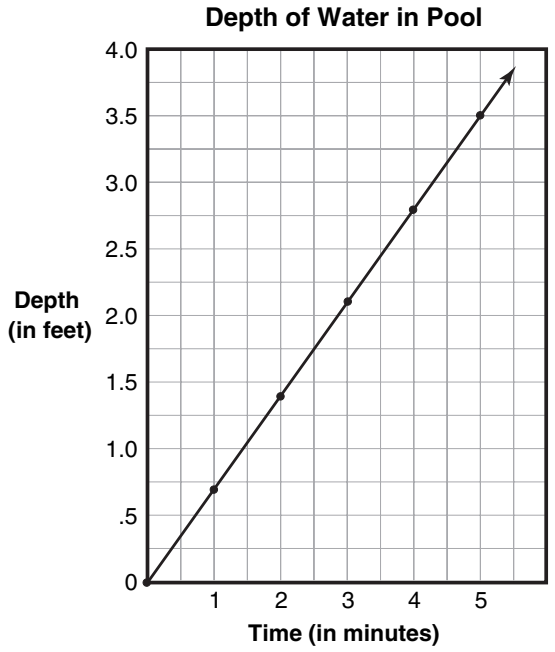
**Estimate** 2.25 feet

After 3 minutes, the pool is 25% full. On the lines below, explain how you would estimate the total depth of the water when the pool is full.

if the pool 2 ft of water in it than when the pool is full it will have 8 ft of water in it because 25% is $\frac{1}{4}$ of 100% so if 4 × 2 = 8 than thats how much it will be when the pool is full.

## SCORE POINT 1

**5** The Smith family is filling their new pool. The graph below shows how the depth of water in the pool changes over time.




ESTIMATE how much the water level rises, in feet, between 1 minute and 4 minutes.

**Estimate** 2 feet

After 3 minutes, the pool is 25% full. On the lines below, explain how you would estimate the total depth of the water when the pool is full.

You would estimate like it 25% full out of 100% so there for there 75% more to fill

**Test 8—Question 5**
**Score Point 1**

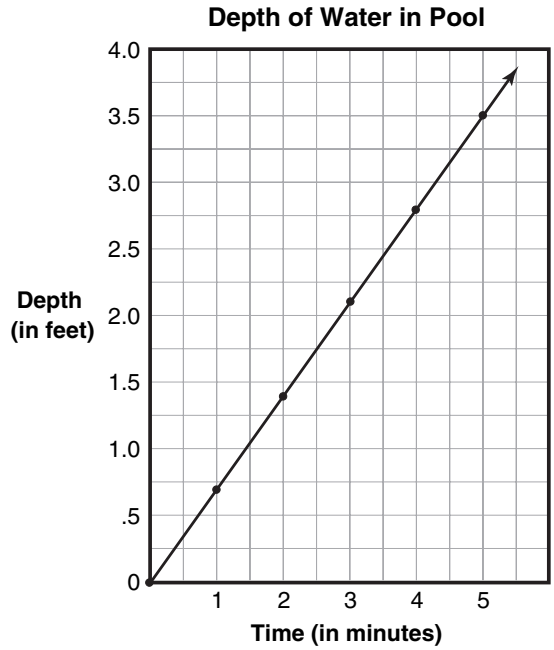
This response shows a correct answer of 2 feet. However, the student does not give a valid explanation of how to estimate the total depth of the pool. Therefore, this response receives a Score Point 1.

**Test 8—Question 5**
**Score Point 0**

This response shows an incorrect answer and an invalid explanation. Therefore, this response receives a Score Point 0.

**SCORE POINT 0**

**5** The Smith family is filling their new pool. The graph below shows how the depth of water in the pool changes over time.




ESTIMATE how much the water level rises, in feet, between 1 minute and 4 minutes.

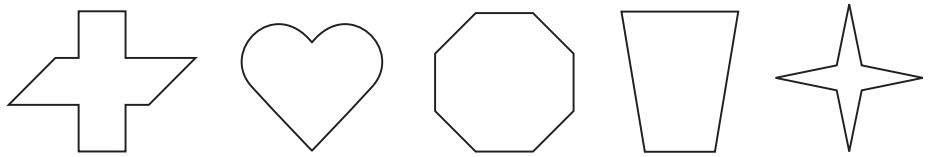
**Estimate** 3.0 feet

After 3 minutes, the pool is 25% full. On the lines below, explain how you would estimate the total depth of the water when the pool is full.

Because if after 3 minutes it's fuller then in 6 minutes it will be full.

## Test 8—Question 6: Geometry

**6** Look at the shapes below.



1 2 3 4 5

Which shape or shapes have reflectional symmetry?

**Answer** _____

Which shape or shapes have rotational symmetry?

**Answer** _____

**Exemplary Response:**

- 2, 3, 4, 5

AND

- 1, 3, 5

**Rubric:**

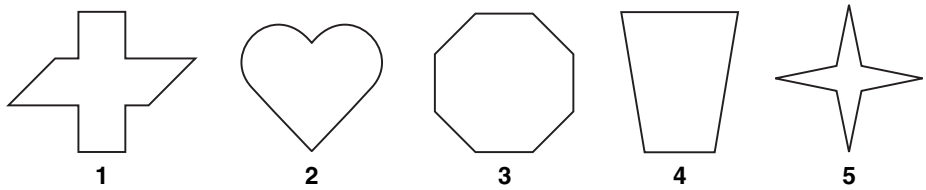
| | |
|---|---|
| **2 points** | Exemplary response |
| **1 point** | One correct component |
| **0 points** | Other |

**Test 8—Question 6**
**Score Point 2**

This response matches the exemplary response contained in the rubric. The student gives the correct numbers for the shapes that have reflectional and rotational symmetry. The response receives a Score Point 2.

**SCORE POINT 2**

**6** Look at the shapes below.




Which shape or shapes have reflectional symmetry?

**Answer** shapes 2, 3, 4 and 5

Which shape or shapes have rotational symmetry?

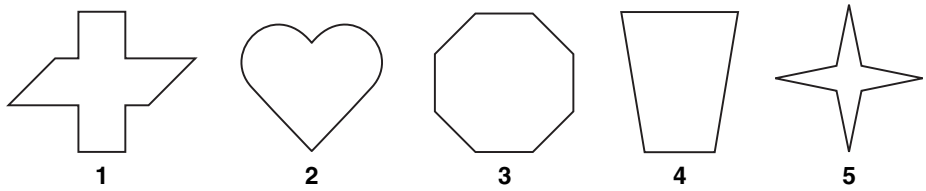
**Answer** shapes 1, 3, and 5

**Test 8—Question 6**
**Score Point 1**

This response correctly gives the numbers of the shapes that have reflectional symmetry. However, the student incorrectly indicates that shapes 2 and 4 have rotational symmetry. Therefore, this response receives a Score Point 1.

**SCORE POINT 1**

**6** Look at the shapes below.




Which shape or shapes have reflectional symmetry?

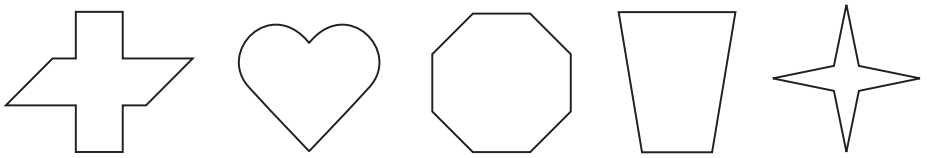
**Answer** 2, 3, 4, and 5

Which shape or shapes have rotational symmetry?

**Answer** 1, 2, 3, 4, and 5

**SCORE POINT 0**

**6** Look at the shapes below.




Which shape or shapes have reflectional symmetry?

**Answer** 1 and 5

Which shape or shapes have rotational symmetry?

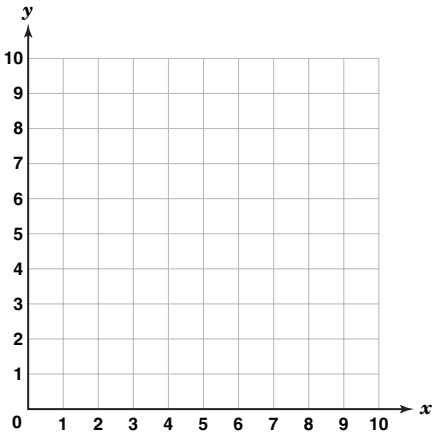
**Answer** 4 and 2

**Test 8—Question 6**
**Score Point 0**

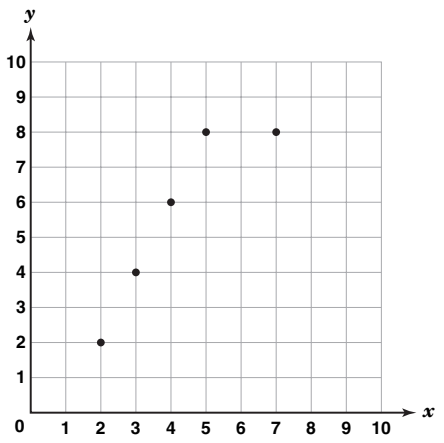
This response does not show the correct numbers of the shapes that have reflectional or rotational symmetry. Therefore, this response receives a Score Point 0.

## Test 8—Question 7: Algebra and Functions

**7** On the grid below, plot the ordered pairs (5, 8), (2, 2), (3, 4), (4, 6), and (7, 8).




**Exemplary Response:**

- 

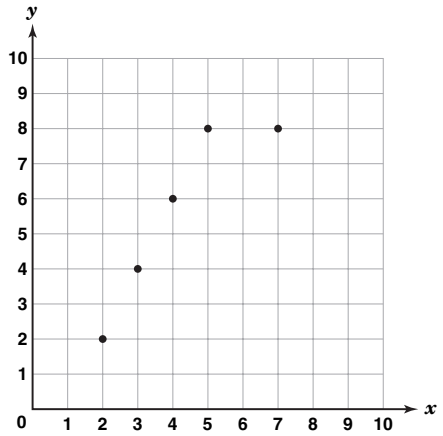

**NOTE:** Award no credit if two or more incorrect points are plotted.

**Rubric:**

| | |
|---|---|
| **2 points** | Exemplary response |
| **1 point** | Three or four correct points plotted |
| **0 points** | Other |

## SCORE POINT 2

**7** On the grid below, plot the ordered pairs (5, 8), (2, 2), (3, 4), (4, 6), and (7, 8).

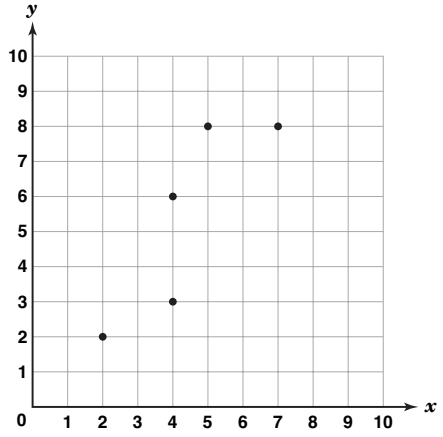



**Test 8—Question 7**
**Score Point 2**

This response matches the exemplary response contained in the rubric. The student has all 5 points plotted correctly. The response receives a Score Point 2.

## SCORE POINT 1

**7** On the grid below, plot the ordered pairs (5, 8), (2, 2), (3, 4), (4, 6), and (7, 8).




**Test 8—Question 7**
**Score Point 1**

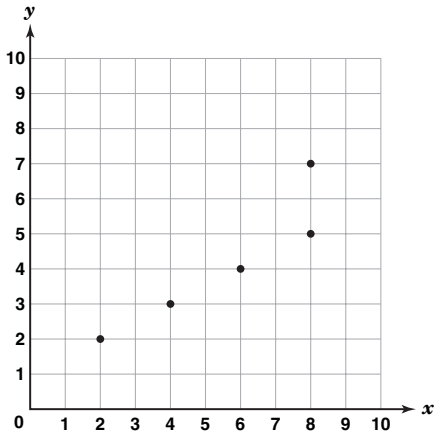
This response shows only four of the five points plotted correctly. Therefore, this response receives a Score Point 1.

**Test 8—Question 7**
**Score Point 0**

This response shows four points plotted incorrectly. The student plots the coordinate points in the wrong order. Therefore, this response receives a Score Point 0.

**SCORE POINT 0**

**7** On the grid below, plot the ordered pairs (5, 8), (2, 2), (3, 4), (4, 6), and (7, 8).



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# Grade 6
## Mathematics

# Fall 2007
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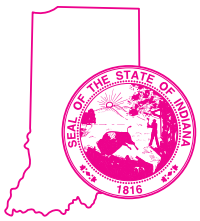


Indiana Department of Education